



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

Did not overhaul
See Attached
4.5NR-OH
Job Sheet OH199344

Part No: 4.5NR-OH

Job Qty: 1 ea

Part Name: Nubbins Receiver Hook



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/20/19

Job Tracking No:

Due Date: 10/8/19

Created By: Jennifer Renwick

Type: Rework - OH

Description: RA763 / Order 18660 / SN 2466-01

Note: DWG OM & OOPM-4.5NR Rev. 5 IPP Rev. A 18.05.01 new issue DP Verify DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier	Sign-off
					Setup Hrs	Run Hrs		
110	External Load - Issue SN	1 pcs	10/8/19	10/8/19	0.00	0.00	External Load - 1 - B4B	
							External Load - 2 - B4B	
							External Load - 3 - B4B	
115	External Load - 2 - B4B	1 pcs	10/8/19	10/8/19	0.00	1.00	External Load - 1 - B4B	5207178 AP 2019-09-03
							External Load - 2 - B4B	
							External Load - 3 - B4B	
120	QC 5	1 pcs	10/8/19	10/8/19	0.00	0.00	QC 5 - 10	
							QC 5 - 11	



Container No: 5207178



Part: 4.5NR

Job No: OH199344

Serial No/ Batch: 2466-01

Revision: 5

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Date: 09/

- IMPORTANT -
NETTOYER LES PIÈCES QUI
VONT AU PLACAGE DANS LA
"QUANTREX" AVANT D'ENVOYER.

140	Outsource - 2 - NDT per QSI038	1 pcs	10/8/19		SKY002-VC	
150	Packaging 2-1 - Receive - B4B	1 pcs	10/8/19	0.00 0.00	Packaging 2 - 1 - B4B	
					Packaging 2 - 2 - B4B	
					Packaging 2 - 3 - B4B	
					Packaging 2 - 5 - B4B	
					Packaging 2 - 4 - B4B	
					Packaging 2 - 6 - B4B	
					Packaging 2 - 7 - B4B	
					Packaging 2 - 8 - B4B	
					Packaging 2 - 9 - B4B	
					Packaging 2 - 10 - B4B	
					Packaging 2 - 11 - B4B	
					Packaging 2 - 12 - B4B	
					Packaging 2 - 13 - B4B	
					Packaging 2 - 14 - B4B	
					Packaging 2 - 15 - B4B	
					Packaging 2 - 16 - B4B	
					Packaging 2 - 17 - B4B	
					Packaging 2 - 18 - B4B	
					Packaging 2 - 19 - B4B	
					Packaging 2 - 20 - B4B	
					Packaging 2 - 21 - B4B	
					Packaging 2 - 22 - B4B	
					Packaging 2 - 23 - B4B	
					Packaging 2 - 24 - B4B	
					Packaging 2 - 25 - B4B	
					Packaging 2 - 26 - B4B	
					Packaging 2 - 27 - B4B	
					Packaging 2 - 28 - B4B	
					Packaging 2 - 29 - B4B	
					Packaging 2 - 30 - B4B	
					Packaging 2 - 31 - B4B	
					Packaging 2 - 32 - B4B	
					Packaging 2 - 33 - B4B	
					Packaging 2 - 34 - B4B	
					Packaging 2 - 35 - B4B	
					Packaging 2 - 36 - B4B	
160	QC 6	1 pcs	10/8/19	0.00 0.00	QC 6 - 9	
					QC 6 - 68	
					QC 6 - 61	
					QC 6 - 40	
					QC 6 - 81	
165	External Load - 3 - B4B	1 pcs	10/8/19	0.00 0.50	External Load - 1 - B4B	
					External Load - 2 - B4B	
					External Load - 3 - B4B	
170	QC 5	1 pcs	10/8/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	
					QC 5 - 18	
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
Plex 8/20/19 10:55 AM Dart.Renwick.Jennifer						

					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	
					QC 5 - 9	
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	
					QC 5 - 61	
					QC 5 - 81	
175	Outsource - 15 - Nickel Plate	1 pcs	10/8/19		GRO002-VC	
180	Packaging 2-2 - Receive - B4B	1 pcs	10/8/19	0.00 0.00	Packaging 2 - 1 - B4B	
					Packaging 2 - 2 - B4B	
					Packaging 2 - 3 - B4B	
					Packaging 2 - 5 - B4B	
					Packaging 2 - 4 - B4B	
					Packaging 2 - 6 - B4B	
					Packaging 2 - 7 - B4B	
					Packaging 2 - 8 - B4B	
					Packaging 2 - 9 - B4B	
					Packaging 2 - 10 - B4B	
					Packaging 2 - 11 - B4B	
					Packaging 2 - 12 - B4B	
					Packaging 2 - 13 - B4B	
					Packaging 2 - 14 - B4B	
					Packaging 2 - 15 - B4B	
					Packaging 2 - 16 - B4B	
					Packaging 2 - 17 - B4B	
					Packaging 2 - 18 - B4B	
					Packaging 2 - 19 - B4B	
					Packaging 2 - 20 - B4B	
					Packaging 2 - 21 - B4B	
					Packaging 2 - 22 - B4B	
					Packaging 2 - 23 - B4B	
					Packaging 2 - 24 - B4B	
					Packaging 2 - 25 - B4B	
					Packaging 2 - 26 - B4B	
					Packaging 2 - 27 - B4B	
					Packaging 2 - 28 - B4B	
					Packaging 2 - 29 - B4B	
					Packaging 2 - 30 - B4B	
					Packaging 2 - 31 - B4B	
					Packaging 2 - 32 - B4B	
					Packaging 2 - 33 - B4B	
					Packaging 2 - 34 - B4B	
					Packaging 2 - 35 - B4B	
					Packaging 2 - 36 - B4B	
185	QC 6	1 pcs	10/8/19	0.00 0.00	QC 6 - 9	
					QC 6 - 68	
					QC 6 - 61	
					QC 6 - 40	
					QC 6 - 81	
190	External Load - 4 - B4B	1	10/8/19	0.00 1.33	External Load - 1 - B4B	

Plex 8/20/19 10:55 AM Dart.Renwick.Jennifer

				External Load - 2 - B4B	
				External Load - 3 - B4B	
195 QC 5	1	10/8/19	0.00 0.00	QC 5 - 10	
	pcs			QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	
				QC 5 - 9	
				QC 5 - 50	
				QC 5 - 30	
				QC 5 - 40	
				QC 5 - 61	
				QC 5 - 81	
200 Packaging 3-1 - Stock - B4B	1	10/8/19	0.00 0.00	Packaging 3 - 1 - B4B	
	pcs			Packaging 3 - 2 - B4B	
				Packaging 3 - 3 - B4B	
				Packaging 3 - 4 - B4B	
				Packaging 3 - 5 - B4B	
				Packaging 3 - 6 - B4B	
				Packaging 3 - 7 - B4B	
				Packaging 3 - 8 - B4B	
				Packaging 3 - 9 - B4B	
				Packaging 3 - 10 - B4B	
				Packaging 3 - 11 - B4B	
				Packaging 3 - 12 - B4B	
				Packaging 3 - 13 - B4B	
				Packaging 3 - 14 - B4B	
				Packaging 3 - 15 - B4B	
				Packaging 3 - 16 - B4B	
				Packaging 3 - 17 - B4B	
				Packaging 3 - 18 - B4B	
				Packaging 3 - 19 - B4B	
				Packaging 3 - 20 - B4B	
				Packaging 3 - 21 - B4B	
				Packaging 3 - 22 - B4B	
				Packaging 3 - 23 - B4B	
				Packaging 3 - 24 - B4B	
				Packaging 3 - 25 - B4B	
				Packaging 3 - 26 - B4B	
				Packaging 3 - 27 - B4B	
				Packaging 3 - 28 - B4B	
				Packaging 3 - 29 - B4B	
				Packaging 3 - 30 - B4B	
				Packaging 3 - 31 - B4B	
				Packaging 3 - 32 - B4B	
				Packaging 3 - 33 - B4B	
				Plex 8/20/19 10:55 AM Dart.Renwick.Jennifer	

Plex 8/20/19 10:55 AM Dart.Renwick.Jennifer

				Packaging 3 - 34 - B4B	
				Packaging 3 - 35 - B4B	
				Packaging 3 - 36 - B4B	
210 DC - 1 - B4B	1	10/8/19	0.00 0.00	DC - 1 - B4B	
	pcs			DC - 2 - B4B	
220 QC21-FG	1 Ea	10/8/19	0.00 0.00	QC 21 - FG - 21	

Part Op 110 - Issue S/N

Descriptions: 115 - TEST ASSEMBLY. DISASSEMBLE ASSEMBLY. INSPECT DAMAGE PART.

120 - (QC5- Inspect part completeness to step on W/O)

140 - LIQUID PENETRANT INSPECTION AS PER QSI 038

150 - (Receive & Inspect for Damage & Mat'l Certs)

160 - (QC6- All purchased or subcontracted products) 1-Triage parts to be sent out for plating

165 - Prepare for nickel plate

170 - (QC5- Inspect part completeness to step on W/O)

175 - -Issue P/O; _____ -All noncertified parts specifying a finish of Nickel Plating per QQ-N-290, or parts with drawings that are missing a specification Can be Nickel Plated per ASTM B733 Type 4/5, SC0-SC4 or MIL-C-26074 Class 1/2 -Material type; 4140 -Heat treat must be carried out to specified hardness if noted on the drawing. -Plating thickness must be carried out as specified on the drawing. -Certificate of Conformity is required

180 - (Receive & Inspect for Damage & Mat'l Certs)

185 - (QC6- All purchased or subcontracted products)

190 - RE-ASSEMBLE. ***All assembly to be done in accordance with manual*** TEST ASSEMBLY. (OH KIT LIST 648.4712)

210 - Photocopy blue file and create labels ***Manual O&OPM-4.5 NR REV.5***

220 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
4.5NR-AR	Nubbins Receiver Hook	1 pcs (1 ea)	110-External Load - Issue SN	
188-FPSS-1032-1/4	Set Screw	2 Ea (2 ea)	190-External Load - 4 - B4B	
4.5NR-10	Lock Roller Pin	1 pcs (1 ea)	190-External Load - 4 - B4B	
4.5NR-13	Lock Bearing Screw	1 pcs (1 ea)	190-External Load - 4 - B4B	
4.5NR-15	Lock Bearing	1 Ea (1 ea)	190-External Load - 4 - B4B	
4.5NR-17	Lock Bushing	1 (1 ea)	190-External Load - 4 - B4B	
4.5NR-20	Load Stop Bushing	2 pcs (2 ea)	190-External Load - 4 - B4B	
4.5NR-23	Bumper1	1 pcs (1 ea)	190-External Load - 4 - B4B	
4.5NR-24	Bumper2	1 pcs (1 ea)	190-External Load - 4 - B4B	
4.5NR-30	Solenoid Cover Screw	2 Ea (2 ea)	190-External Load - 4 - B4B	
4.5NR-35	Latch Bushing	2 pcs (2 ea)	190-External Load - 4 - B4B	
4.5NR-36	Latch Spring	2 pcs (2 ea)	190-External Load - 4 - B4B	
4.5NR-39	Keeper Spring	1 (1 ea)	190-External Load - 4 - B4B	
4.5NR-46	Lever Bushing	1 pcs (1 ea)	190-External Load - 4 - B4B	
4.5NR-52	Keeper Bushing	1 pcs (1 ea)	190-External Load - 4 - B4B	
4.5NR-7	Lifter Bushing	2 pcs (2 ea)	190-External Load - 4 - B4B	
4.5NR-9	Lifter Spring	2 pcs (2 ea)	190-External Load - 4 - B4B	
AN6-13A	Bolt	6 Ea (6 ea)	190-External Load - 4 - B4B	
AN6-14A	Machine Bolt 3/8-24 X 1.58 - Steel	1 Ea (1 ea)	190-External Load - 4 - B4B	
AN6-24A	Hex Bolt 3/8-24 X 2 1/2"	1 Ea (1 ea)	190-External Load - 4 - B4B	
AN6-40A	3/8-24 Bolt X 3" Long	1 Ea (1 ea)	190-External Load - 4 - B4B	
AN7-24A	Bolt	1 Ea (1 ea)	190-External Load - 4 - B4B	
AN7-40A	Bolt	1 Ea (1 ea)	190-External Load - 4 - B4B	
C45-10-1	Lock Spring Pin	1 Ea (1 ea)	190-External Load - 4 - B4B	
C45-13-2	Teflon Keeper, Spacer	2 Ea (2 ea)	190-External Load - 4 - B4B	
C45-3-2-1	Snap Ring	2 Ea (2 ea)	190-External Load - 4 - B4B	
C45-3-4-1	Retaining Ring	2 Ea (2 ea)	190-External Load - 4 - B4B	
C45-3-5	Teflon Spacer	2 Ea (2 ea)	190-External Load - 4 - B4B	
MS21044N6	Nut, Self-Lock .375-24,UNJF-3B	1 Ea (1 ea)	190-External Load - 4 - B4B	
MS21044N7	Keeper Nut	2 Ea (2 ea)	190-External Load - 4 - B4B	
MS21083N3	Nut	2 Ea (2 ea)	190-External Load - 4 - B4B	
MS21083N6	Nut	1 Ea (1 ea)	190-External Load - 4 - B4B	
NAS1149F0332P	Washer (AN960-10L)	2 Ea (2 ea)	190-External Load - 4 - B4B	
NAS1149F0632P	Washer (AN960-616L)	2 Ea (2 ea)	190-External Load - 4 - B4B	
NAS1149F0663P	Washer (AN960-616)	9 Ea (9 ea)	190-External Load - 4 - B4B	
NAS1149F0763P	Washer (AN960-716)	4 Ea (4 ea)	190-External Load - 4 - B4B	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
110-External Load - Issue SN	4.5NR	1	0	0
190-External Load - 4 - B4B	188-FPSS-1032-1/4	2	113	0
	4.5NR-10	1	32	0
	4.5NR-13	1	3	0
	4.5NR-15	1	5	0
	4.5NR-17	1	0	0
	4.5NR-20	2	11	0
	4.5NR-23	1	17	0
	4.5NR-24	1	28	0
	4.5NR-30	2	44	0
	4.5NR-35	2	16	0
	4.5NR-36	2	14	0
	4.5NR-39	1	0	0
	4.5NR-46	1	0	0
	4.5NR-52	1	13	0
	4.5NR-7	2	31	0
	4.5NR-9	2	10	0
	AN6-13A	6	84	0
	AN6-14A	1	23	0
	AN6-24A	1	24	0
	AN6-40A	1	45	0
	AN7-24A	1	22	0
	AN7-40A	1	31	0
	C45-10-1	1	152	0
	C45-13-2	2	38	0
	C45-3-2-1	2	69	0
	C45-3-4-1	2	71	0
	C45-3-5	2	79	0
	MS21044N6	1	99	0
	MS21044N7	2	16	0
	MS21083N3	2	91	0
	MS21083N6	1	50	0
	NAS1149F0332P	2	1,653	0
	NAS1149F0632P	2	316	0
	NAS1149F0663P	9	399	0
	NAS1149F0763P	4	145	0

Part Specifications

Specifications could not be found.

Plex 8/20/19 10:55 AM Dart.Renwick.Jennifer

Inspection Sheet Complete RA763

Part Number	Original Batch / Serial # / Ctr #	Original Revision #	Quantity	Part Complete	Rev/CHG Current	New Paperwork	New Labels	Disposition	Original Container #	New (Receiving) Serial #	New Job #	Work order instructions
4.5NR-OH	03-17112-01		1	☒ Yes	☐ Yes	☒ Yes	☐ Yes	CUSTOMER SUPPLIED		SZ05360	OH199346	Overhaul
0	2468-01		1	☒ Yes	☐ Yes	☒ Yes	☐ Yes	CUSTOMER SUPPLIED		SZ05361	OH199344	Overhaul
0			0	☐ Yes	☐ Yes	☐ Yes	☐ Yes					
0			0	☐ Yes	☐ Yes	☐ Yes	☐ Yes					
0			0	☐ Yes	☐ Yes	☐ Yes	☐ Yes					
0			0	☐ Yes	☐ Yes	☐ Yes	☐ Yes					

Customer QA Ref # 0

QC Approval: 0

Date: 0-Jan-00

Special Return/Rework Instructions:



Remote Cargo Hook Test Form

4.5NR

Work Order

0H199344

Customer

RA763/Order 18660

Serial Number

2466-01

Date

2019-8-23

# of Releases	Load (Lbs.)	Release Method	Remarks	Result	Pass/Fail
1	11,250	Static Hold	Hold for two Minutes and reduce load to zero	N/A	Pass
10	2,250	Electircal, 25 volts	No "hang ups" permitted	N/A	Pass
2	4,500	Electircal, 22 volts	Current shall not exceed 4.5A	4.0 A	Pass
2	3,500	Electircal, 22 volts	Current shall not exceed 4.5A	4.0 A	Pass
2	2,500	Electircal, 22 volts	Current shall not exceed 4.5A	3.5 A	Pass
2	1,500	Electircal, 22 volts	Current shall not exceed 4.5A	3.3 A	Pass
2	500	Electircal, 22 volts	Current shall not exceed 4.5A	3.3 A	Pass
1	4,500	Electircal, 20 volts	Current shall not exceed 4.1A	3.1 A	Pass
1	4,500	Electircal, 28 volts	Current shall not exceed 5.7A	4.6 A	Pass
1	4,500	Manual		N/A	Fail
1	N/A	Solenoid Ohms	Shall not exceed 4.9-5.6 Ohms	5.5 Ω	Pass
1	N/A	Electircal Continuity	Across both wires	N/A	Pass

Test Conducted By:

Michael Salondo

Technician

Signature:

QC 5 Small FAB / QA

Submit



NDT Inspection Form 4.5 NR

Work Order

0H199344

Customer

RA763 / ORDER 18660

Serial Number

2466-01

Date

2019/09/03

MAGNAFLUX

Part Number	Description	Quantity	
4.5 NR-8	Lifter	1	
4.5 NR-10	Lock Roller Pin	1	
4.5 NR-12	Latch	1	
4.5 NR-14	Lock Roller	1	
4.5 NR-16	Lock	1	
4.5 NR-18	Load Stop	1	
4.5 NR-40	Keeper	1	
4.5 NR-41	Latch Roller	1	
4.5 NR-43	Lever	1	
4.5 NR-45	Latch Roller Pin	1	

ZYGLO

TOTAL : 10

Part Number	Description	Quantity	Pass/Fail
4.5 NR-6	Side Plate Cover	1	
4.5 NR-25	Side Plate Solenoid	1	

TOTAL : 1

Tested by

Signed

ALAN PATRY



Overhaul Incoming Inspection
4.5NR Cargo Hook

Customer

OH199344 / RA 763

Date

2019/09/03

ORDER Number

18660

Serial Number

2466-01

Additional Recommended Replacement Parts

Part Number to Replace

Customer Approval

(1) x 4.5NR-25 SIDE PLATE SELENID SIDE

☐

(1) x 4.5NR-27 SELENID COVER

☐

(1) x 8183K6 STRAIN RELIEF CONNECTOR

☐

(1) x 4.5NR-32 RELEASE KNOB

☐☐

(1) x 4.5NR-C CAGE ASSY.

☐☐☐☐☐

Inspected By

ALAN PATRY

Jennifer Renwick

From: Chantal Chartrand
Sent: Monday, September 16, 2019 11:50 AM
To: Jennifer Renwick; Lacey Cantin
Cc: Linda Lacelle
Subject: RE: Cargo Hooks for Overhaul RMA - RA763, Order 18660 + 18661
Attachments: 18660 revised.pdf; 18661 revised.pdf

Both orders updated

From: Jennifer Renwick <jrenwick@dartaero.com>
Sent: September 16, 2019 11:35 AM
To: Chantal Chartrand <cchartrand@dartaero.com>; Lacey Cantin <lcantin@dartaero.com>
Cc: Linda Lacelle <llacelle@dartaero.com>
Subject: RE: Cargo Hooks for Overhaul RMA - RA763, Order 18660 + 18661

Can you please also note what batches to ship on the order? Please see below:

Container: S207178 – original SN 2466-01
Container: S213948 – original SN 03-17112-01

Thank you!
Jen

From: Chantal Chartrand <cchartrand@dartaero.com>
Sent: Monday, September 16, 2019 9:56 AM
To: Jennifer Renwick <jrenwick@dartaero.com>; Lacey Cantin <lcantin@dartaero.com>
Subject: RE: Cargo Hooks for Overhaul RMA - RA763, Order 18660 + 18661

Yeah, I think so.
Perfect..I will do that.

Thanks Jen ;-)

From: Jennifer Renwick <jrenwick@dartaero.com>
Sent: September 16, 2019 9:55 AM
To: Chantal Chartrand <cchartrand@dartaero.com>; Lacey Cantin <lcantin@dartaero.com>
Subject: RE: Cargo Hooks for Overhaul RMA - RA763, Order 18660 + 18661

That sounds good. I think we did a manual invoice last time because we scrapped the item here.

From: Chantal Chartrand <cchartrand@dartaero.com>
Sent: Monday, September 16, 2019 9:44 AM
To: Jennifer Renwick <jrenwick@dartaero.com>; Lacey Cantin <lcantin@dartaero.com>
Subject: RE: Cargo Hooks for Overhaul RMA - RA763, Order 18660 + 18661

Thanks
Lacey

From: Francisco Garcia [<mailto:francisco@heliqwest.com>]
Sent: September 12, 2019 1:26 PM
To: Lacey Cantin <lcantin@dartaero.com>
Cc: purchasing <purchasing@heliqwest.com>; Timber Gleeson <timberg@heliqwest.com>; Derek Serafin <dereks@heliqwest.com>; Carson J <carsonj@heliqwest.com>
Subject: RE: Cargo Hooks for Overhaul RMA - RA763, Order 18660 + 18661

Lacey,

I got confirmation we will not be overhauling these hooks. Please return as is to HeliQwest International FedEx most economic option. I will update my ROs to reflect the \$250 charge per hook.

Thank you for your time and effort,
Francisco "Cisco" Garcia
Purchasing



HeliQwest International, Inc.

11915 Airport Way #6

Broomfield, CO 80021

(o) 303-469-2932 ext. 117

(c) 303-408-7587